REMARKS/ARGUMENTS

Claims 1-23 were previously pending in the application. New claim 24 is added herein. Claims 1-24 are now pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

Prior-Art Rejections

On pages 3-4 of the Office Action, the Examiner rejected claims 1-6 under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. App. Pub. No. 2003/0117950 to Huang et al. On pages 4-7, the Examiner rejected claims 7-23 under 35 U.S.C. 103(a) as unpatentable over Huang in view of U.S. Pat. No. 6,996,065 B2 to Kodialam et al. For the following reasons, the Applicant submits that all of the pending claims are allowable over the cited references.

Claims 1 and 17

In rejecting claim 1, the Examiner argued that Huang discloses all of the claimed elements of claim 1. The Applicant respectfully submits that Huang does not teach all the claimed elements of claim 1. It is well known that unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.

The Examiner cited paragraph 40 and Figure 1 of Huang as allegedly specifically teaching a network data structure comprises, for each link in the network and each node or other link in the network, a representation of a minimum amount of protection bandwidth required to be reserved on said each link to restore service upon failure of said each node or other link. Figure 1 of Huang shows a schematic illustration of a communication network. Paragraph 40 of Huang discloses, *inter alia*, a Minimum Cost Route (MCR) table. The Examiner did not indicate which element of Huang allegedly corresponds to the recited network data structure of claim 1. The Applicant presumes that the Examiner believed that the MCR table is the Huang element that corresponds to the recited network data structure. If that is not the case and the Examiner

believes that another element disclosed in paragraph 40 of Huang corresponds to the claimed network data structure, then the Applicant respectfully requests a clarification.

According to paragraph 40 of Huang, the MCR table is "a table of routes that have been pre-computed to connect the head end node 102A to the tail end node 102B. The routes in the table may be organized to reflect certain characteristics of the route that may be optimized when selecting a route. As such, a table of routes may be organized by a metric called 'cost'.... The MCR table can maintain a list of a limited number of backup routes for a given link. The MCR table can also keep track of protection bandwidth availability status for each link on a backup route." The information, for a given link, stored by the MCR table is different from the information stored by the claimed network data structure.

Note that the claimed network data structure requires that "for each link in the network and each node or other link in the network, a representation of a minimum amount of protection bandwidth required to be reserved on said each link to restore service upon failure of said each node or other link" (emphasis added). By contrast, for a given link, Huang's MCR table maintains information about possible backup routes for that given link, where the information can include cost and available bandwidth for each possible backup route. Thus, firstly, the MCR table includes information about available bandwidth on a potential backup route and not the bandwidth required to be reserved on the given link. Secondly, the information for a given link in Huang's MCR table is for reacting to a failure of that given link, while, on the contrary, the information for a given link in the claimed network data structure is for reacting to a failure on a network element other than that given link. Consequently, it cannot be said that the MCR table corresponds to the claimed network data structure.

For a given link, the claimed network data structure represents a minimum amount of bandwidth required to be reserved on that given link in order to restore service upon failure of each of the network nodes and the other links in the network. Thus, for example, if a network consists of ten links labeled 1-10 and five nodes labeled A-E, then the network data structure would represent, for link 1 with respect to each of links 2-10 and nodes A-E, the minimum amount of protection bandwidth required to be reserved on link 1 to restore service upon failure of each of links 2-10 and nodes A-E. Similarly, the network data structure would represent for link 2 with respect to each of links 1 and 3-10 and nodes A-E, the minimum amount of protection bandwidth to be reserved on link 2 to restore service upon failure of each of links 1

and 3-10 and nodes A-E. The network data structure would also represent the corresponding information for links 3-10. The network data structure for this exemplary network of ten links and five nodes would represent 10*(9+5), or 140 minimum-bandwidth data points (it should be noted that the particular form of this representation is not limited and the data may be stored in expanded or compact formats). Neither the cited teachings nor any other teachings of Huang disclose any data structure of this sort. Thus, it cannot be said that Huang teaches this requisite element of claim 1.

The Examiner also argued that paragraphs 45 and 46 of Huang specifically teach "determining, using the network and service data structures, whether the new service requires additional protection bandwidth to be reserved on any link in the network." Note, however, in this regard that paragraph 45 of Huang actually discloses selecting an alternate backup route if the requested amount of protection bandwidth is determined to be unavailable and paragraph 46 of Huang describes steps followed by a given node upon receipt of a Label Request message, which include determining whether the amount of protection bandwidth requested in the Label Request message is available on a fiber to the next node. Thus, the description in Huang makes no mention of the MCR table, which the Examiner alleged corresponds to the recited network data structure. Furthermore, the teachings of Huang's paragraphs 45 and 46 apply only to links on a backup route and not to any link in the network. As a result, it cannot be said that Huang teaches determining, using the network and service data structures, whether the new service requires additional protection bandwidth to be reserved on any link in the network.

In view of the foregoing, the Applicant submits that claim 1 is allowable over Huang. For similar reasons, the Applicant submits that claim 17 is also allowable over Huang. Since claims 2-16 and 21-24 depend variously from claim 1, and claims 18-20 depend variously from claim 17, it is further submitted that those claims are also allowable over Huang.

Claim 5

In rejecting claim 5, the Examiner argued that Huang teaches all the elements of claim 5, including that "each of the nodes in the network has all of the information in the network data structure." The Examiner cited paragraphs 46 and 47 of Huang as allegedly specifically teaching this element. The Applicant respectfully submits that the cited sections do not teach the claimed elements.

As noted above, paragraph 46 of Huang describes steps followed by a given node upon receipt of a Label Request message, which include determining whether the amount of protection bandwidth requested in the Label Request message is available on a fiber to the next node. Paragraph 47 of Huang describes what a head-end node does after sending out a Label Request message. Neither paragraph 46 nor paragraph 47 even mentions each of the nodes in the network or all of the information in the network data structure, let alone discloses that each of the nodes in the network has all of the information in the network data structure. Consequently, it cannot be said that Huang teaches this requisite element of claim 5.

Thus, the Applicant respectfully submits that this provides further grounds for the allowability of claim 5 over the cited references.

Claim 8

In rejecting claim 8, the Examiner argued that the combination of Huang and Kodialam teaches all the requisite elements of claim 8, including "applying a vector addition operation between the primary path vector corresponding to the new service request and the vector of the array corresponding to the link *A* to form a result vector." The Examiner cited Kodialam at column 4, lines 13-18, as specifically teaching this element. The Applicant submits that the proposed combination does not teach this element of claim 8.

In rejecting claims 1 and 7, from which claim 8 variously depends, the Examiner asserted that (1) the array of vectors that forms the network data structure and (2) the primary path vector that forms the service data structure are both disclosed by Huang. Although the Examiner asserted that Kodialam teaches an array of vectors, the Examiner did not even assert that Kodialam specifically discloses the claimed network data structure. The Applicant submits that Kodialam does not disclose the claimed network data structure. A reference, *e.g.*, Kodialam, that does not disclose two particular elements, *e.g.*, network and service data structures, cannot be said to disclose the addition of those two particular elements. In addition, the cited section of Kodialam discusses switching from an active path to a backup path after a network failure, but does not discuss vector addition. Consequently, it cannot be said that the cited section teaches this requisite element of claim 8.

Thus, the Applicant submits that this provides further grounds for the allowability of claim 8. Since claims 9 and 10 depend from claim 8, it is further submitted that this also provides further grounds for the allowability of those claims over the cited references.

Claim 21

In rejecting claim 21, the Examiner asserted that claim 21 is "substantially the same as claim 7." The Applicant submits that the Examiner is incorrect. Claim 21 recites that "each vector in the network data structure array has a plurality of entries corresponding to all the nodes and links in the network" (emphasis added). None of the cited references teach this element of claim 21.

One cited section of Kodialam discloses a vector for a node where the vector "has a length m equivalent to the number m of links in the graph of the network" (Kodialam, col. 11, lines 65-66). For one thing, the cited section does not mention including any nodes in the disclosed vector, let alone all the nodes. The other cited section of Kodialam mentions "vectors [that] each represent a predecessor array of nodes along the shortest path tree for computations at a current node" (Kodialam, col. 13, lines 35-37). For one thing, the cited section does not mention any links in the disclosed array of nodes, let along all the links. Consequently, it cannot be said that the cited references teach all the elements of claim 21.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 21 over the cited references. Since claim 24 depends from claim 21, it is further submitted that this also provides further grounds for the allowability of that claim.

Claim 22

In rejecting claim 22, the Examiner asserted that claim 22 is "substantially the same as claim 7." The Applicant submits that that is not so. Claim 22 includes the feature that "the service data structure is a primary path vector having a plurality of entries corresponding to all the nodes and links in the network, wherein each entry of the primary path vector identifies whether the corresponding node or link is or is not part of the primary path for the new service" (emphasis added). The Applicant submits that the cited sections of the cited references do not teach this element of claim 22.

One cited section of Kodialam discloses a vector for a node where the vector "has a length m equivalent to the number m of links in the graph of the network" (Kodialam, col. 11, lines 65-66). For one thing, the cited section does not mention including any nodes in the disclosed vector, let alone all the nodes. The other cited section of Kodialam mentions "vectors [that] each represent a predecessor array of nodes along the shortest path tree for computations at a current node" (Kodialam, col. 13, lines 35-37). For one thing, the cited section does not

mention any links in the disclosed array of nodes, let along all the links. Consequently, it cannot be said that the cited references teach all the elements of claim 22.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 22 over the cited references.

Claim 23

In rejecting claim 23, the Examiner asserted that claim 23 is "substantially the same as claim 7." The Applicant submits that that is not so. Claim 23 includes the feature that "at least one entry of the primary path vector identifies that the corresponding node or link is not part of the primary path for the new service" (emphasis added). The Applicant submits that the cited sections of the cited references do not teach this element of claim 23.

One cited section of Kodialam discloses a vector for a node where the vector "has a length m equivalent to the number m of links in the graph of the network" (Kodialam, col. 11, lines 65-66). For one thing, the cited section does not mention including any nodes in the disclosed vector, let alone all the nodes. The other cited section of Kodialam mentions "vectors [that] each represent a predecessor array of nodes along the shortest path tree for computations at a current node" (Kodialam, col. 13, lines 35-37). For one thing, the cited section does not mention any links in the disclosed array of nodes, let along all the links. Consequently, it cannot be said that the cited references teach all the elements of claim 23.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 23 over the cited references.

Claim 24

New claim 24 is directed to the invention of claim 21, wherein the service data structure is a primary path vector having a plurality of entries corresponding to all the nodes and links in the network, wherein each entry of the primary path vector identifies whether the corresponding node or link is or is not part of the primary path for the new service. Support for new claim 24 can be found in previously pending claim 22. The Applicant submits that at least some of the reasons provided above for the allowability of claim 22 also provide further grounds for the allowability of claim 24.

Conclusion

In view of the above amendments and remarks, the Applicant believes that the now-pending claims are in condition for allowance. Therefore, the Applicant believes that the entire

application is now in condition for allowance, and early and favorable action is respectfully solicited.

Fees

During the pendency of this application, the Commissioner for Patents is hereby authorized to charge payment of any filing fees for presentation of extra claims under 37 CFR 1.16 and any patent application processing fees under 37 CFR 1.17 or credit any overpayment to Mendelsohn & Associates, P.C. Deposit Account No. 50-0782.

The Commissioner for Patents is hereby authorized to treat any concurrent or future reply, requiring a petition for extension of time under 37 CFR § 1.136 for its timely submission, as incorporating a petition for extension of time for the appropriate length of time if not submitted with the reply.

Respectfully submitted,

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